

**CLAIMS**

1. A coordinate measurement machine comprising:  
a first part and a second part, the second part  
5 being movable relative to the first part;  
a measurement device having a stylus and stylus  
tip;  
a joint for interconnecting the measurement device  
and the second part, the joint comprising at least one  
10 rotatable member rotatably repositionable relative to  
the second part;  
an engagement comprising two mutually engageable  
portions, one on the first part and one on the  
rotatable member;  
15 wherein a first one of said portions of the  
engagement comprises a holder for holding the other one  
of said portions in engagement therewith; and wherein  
the said one of the portions of the engagement on  
the rotatable member is spaced from the stylus tip.  
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2. A coordinate measurement machine as claimed in  
claim 1 wherein the rotatable member is repositionable  
to a plurality of repeatable positions.
- 25 3. A coordinate measurement machine as claimed in  
claim 1 wherein the said other one of the portions of  
the engagement comprises a spherical surface and the  
holder comprises a spherical surface accepting area.
- 30 4. A coordinate measurement machine as claimed in  
claim 3 wherein the spherical surface is formed on the  
rotatable member and the holder is formed on the first  
part.

5. A coordinate measurement machine as claimed in claim 4 wherein the holder includes a vacuum conduit.

6. A coordinate measurement machine as claimed in claim 3 wherein the spherical surface is formed on the first part and the holder is formed on the rotatable member.

7. A measurement device comprising:  
10 a stylus and a stylus tip;  
a movable joint for connecting the stylus to a support the joint having a movable member;  
a stylus repositioning device; and  
an engagement comprising two mutually engageable  
15 portions, one on the movable member and one on the stylus repositioning device;  
wherein a first one of the said portions of the engagement comprises a holder for holding the other one of the said portions in engagement therewith and  
20 wherein the said of the portions of the engagement on the rotatable member is spaced from the stylus tip.

8. A measurement device as claimed in claim 7 wherein the movable member is rotatably repositionable into a plurality of repeatable positions relative to the joint repositioner.

9. A measurement device as claimed in claim 7 wherein the said other one of the portions of the engagement  
30 comprises a spherical surface and the holder comprises a spherical surface accepting area.

10. A measurement device as claimed in claim 9 wherein the spherical surface is formed on the rotatable member

and the holder is formed on the first part.

11. A measurement device as claimed in claim 10 wherein the holder includes a vacuum conduit.

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12. A measurement device as claimed in claim 9 wherein the spherical surface is formed on the first part and the holder is formed on the rotatable member.

10 13. A measurement device as claimed in claim 7 or 8 wherein the joint allows the movable member to be repositionable into the said plurality of repeatable positions in two rotational axes.

15 14. A method of reorientating a measurement device mounted to a coordinate measurement machine, the coordinate measurement machine having:

a first part and a second part being movable relative to the first part; and

20 a first portion of an engagement;

the measurement device having:

a stylus and a stylus tip;

a joint for interconnecting the stylus with the second part and for reorientating the stylus;

25 the measurement device further comprising a second portion of an engagement for mutual engagement with the first portion;

one of the two portions of the engagement comprising a holder for holding the other one of the said portions in engagement therewith, the second portion of the engagement being spaced from the stylus tip, the method comprising:

30 moving the first and second parts in order to engage the first and second portions of the engagement;

moving the second part relative to the first part in a path centred on the engagement thereby to reposition the stylus relative to the first and second parts; and

- 5           disengaging the first and second portions of the engagement by relative movement of the first and second parts.

15. A method as claimed in claim 14 wherein the joint  
10 allows the repositioning of the stylus into a plurality of repeatable positions relative to the second part.

16. A method as claimed in claim 14 or 15 including the step of:

- 15           unlocking the joint to allow its repositioning.